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Interest rates volatility and its consequences on stock returns: The case study from Amman Stock Exchange, Jordan

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Abstract. This paper examines the special effects of interest rates on the stock market return by using monthly time series data for the economy of Jordan over the period of 2006 to 2016. An extensive variety of econometric procedures have been involved to analyze the relationship between the interest rate and stock market return. The study exposes a constant and significant long-run relationship between the variables. By using Cointegration methods the experimental in the long run represents that a one percent rise in interest rate causes (12.3459 %) reduction in market index. The assessed error correction coefficient highlight that (-0.678522) percent deviation of stock returns are corrected in the short run. Impulse response function of the study furthermore sustains the positive relationship between the variables. The result of Variance decompositions recommends that about (99.99705%) of the variation in stock market returns is referring to its own shock which denotes that stock market returns are mostly independent of the other variables in the structure. To go over the main points, Granger causality analysis yield that there is no presence of a unidirectional causality as of interest rate to the market index.

Keywords. Stock market, Cointegration, Granger causality, Interest rate, ASE.

JEL. E40, E43, G12.

1. Introduction

Stock market plays a vital role to improve the economic growth of the kingdom. A good performance stock market is an envoy of the financial power of any financial system. The performance of stock market depends on several economic causes and financiers a real ways enthusiastic to know the impact of these aspects on stock prices. Amongst various financial variable interest rates are considered to be explained one which exerts a major influence on stock prices. Interest rate risk is a key financial and economic issue which have an effect on the value of common stocks (Joseph *et al.*, 2006).

This paper explores the forceful special effects of changes in interest rates on the stock market return in Jordan. Jordan is representative its increasing significance not only to the economy of this area but also to the economy of many countries of the world. The quick growth of the country's monetary system is obvious after initiating the Amman Stock Exchange (ASE) restructured during 1999. The Amman Stock Exchange (ASE) is a non-profit self-regulating association; approved to the role as a synchronized market for trading securities in Jordan. (Retrieved from).

The economic theory proposes that interest rate is one of the macroeconomic factors that have to systematically influence stock market return (Chen *et al.*,

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1986). Consequently, an interest rate is measured as one of the mainly considerable determinants of the stock prices (Modigliani & Chon, 1979). This paper tries to analyze the relationship of the stock market index with interest rate volatility in Jordan between 2006 and 2016 using monthly time series data.

2. Literature review

The vibrant relationship between market indices with interest rate is an element of study to the researchers over a long historical period of time. Nonetheless, a precise rare researchers show the effect of interest rate on stock market return in ASE. It is supposed via several researchers that the stock prices and interest rates are negatively linked. Several researchers struggled to regulate the relationship between interest rate and stock returns. Such as Modigliani, (1971) and Mishkin, (1977) supposed that a low-interest rate indications to higher capital flow to the stock market in prospect for a higher rate of return where a great interest rate reassures extra savings in banks and thus decreases the flow of capital to the stock markets. Any decreasing of interest rates clues to lower cost of borrowing. People incline to the proceeds of supplementary loans at a lower cost as of the reduction of interest rate is followed by the progression of monetary policy which can be invested in stock market. As well, a decline in interest rate creates a reduced amount of eye-catching in the investment in fixed income securities, and therefore individuals transfer their money from the bond market to the equity market. Equally, movements cause the stock prices to boost up. Hence, a rise in the interest rate causes the stock prices to drop and a drop in the interest rates causes the stock prices to increase (Smirlock & Yawitz, 1985; Hardouvelis, 1987; Thorbecke, 1997).

Chen *et al.*, (1986) studied the influence of a set of economic powers on stock return and set up that the fluctuations in aggregate production, expected and unexpected inflation, the short-term interest rates, and the risk premium have systematic power on stock return. Hasan & Javed (2009) examined the association between equity prices of Pakistan stock market with the money supply, foreign exchange rate, Treasury bill rate, And the CPI. They discovered that the connection of the interest rate with equity market returns is negative. Leon's (2008) produced a study with GARCH model; which shows a negative relationship between Korean Stock Price Index 200 (KOSPI) and Negotiable Certificates of Deposits (Korea NCD 91-Day yield). The research of Adam & Tweneboah (2008) and Coleman & Tettey (2008) for the state of Ghana; the study of Nikiforos (2006) for the economy of the United States and the study of Liu & Shrestha (2008) for the economy of China illustration reverse relationship among stock return and interest rate. Arango *et al.*, (2002) empirically scrutinized the relationship of the share prices on the Bogota stock market with an interbank loan interest rate in Colombia and found opposite and nonlinear connation between the research variables. This adverse relationship likewise can be found in other academics' recent studies (Kim, 2003; Nissim *et al.*, 2003; Hsing, 2004; Khrawish *et al.*, 2010). The form of stock returns is related to monetary policy results. A diminished reduction degree indications to rise in long-duration stock returns which are upper than returns followed by improved discount rate (Jensen & Johnson, 1995). The study of Fama & Schwert (1977) displays a converse relationship between common stock returns and Treasury bill rates. Booth & Booth (1997) utilized dual variables of monetary policy. One is the discount rate and alternative is the federal fund rate. The outcomes of their study displayed that a diminution in monthly return of both large and small bond and stock portfolio is related to an obstructive monetary policy. Many scholars definite these results (Patelis 1997 and Thorbecke, 1997). Specific studies discover a positive link between these two variables. The study of Elton & Gruber (1988) exposes a positive relationship between stock prices and short-term interest rates. This positive connection is sustained by Keynesian hypothesis based on a sticky price model. Keynes confirmations that stock price will be exaggerated by money supply when only it deviates the expectations about future Fed policy or

fluctuations the future interest rates (Sellin, 2001). Particular current studies settle these findings of positive relationship (Ologunde *et al.*, 2006; Mohamed *et al.*, 2008). Harasty & Roulet (2000) showing a study on seventeen developed countries. His conventional out comes indicated that stock prices are cointegrated with the long-period interest rate in all countries except for Italy. In the up-to-date historical period, a number of researchers formed a cointegrating relationship between the interest rate and the stock return in their researches (Omran, 2003; Maysami *et al.*, 2004; Subramanian, 2008; Vardar *et al.*, 2008; Pallegedara, 2012). The study of Shah *et al.*, (2012) exposes a unidirectional causation, for the economy of Pakistan, starting from interest rate to market index. Equivalent, causality is presented in the research of Cifter & Ozun (2007) in place of Turkey. And yet, Pallegedara (2012) is established that absolutely not the short-run causal relationships between the stock market returns and the short period interest rate.

The study of Joseph & Vezos (2006), accomplish that the stock returns are vastly compound to the interest rate changes thru using daily data. Nonetheless, Kurihara & Nezu's (2006) in their study point out that there is an irrelevant connection between the Japanese stock prices and the interest rate.

3. Objective of the study

The objective of this study is to set up the relationship between interest rates volatility and stock market returns in the Amman Stock Exchange.

4. Importance of the study

The study is important in the next ways:

1. The Jordan Central Bank will be able to discover the level of impact of interest rates on the stock market.
2. Possible practitioners will be able to expect the impact of changes in interest rates on stock returns.
3. Financial managers will be able to perform a superior control and to expect the impact that interest rates volatility on the portfolio they hold. This will help them in making decisions which is relating to reallocation of assets in their portfolio to diminish against interest rate volatility risk.
4. Academics doing studies in future will be able to evaluate and realize if there are any considerable changes that should be taken into consideration before starting any experimental studies.

5. Purpose of research

The purpose of this study is to figure out the relationship between stock market and interest rate volatility a hypothesis is used. Here we also stated two expected hypotheses that will show relative to these variables. Two hypotheses are to be investigated in order to discover the connection between two variables. We will try to confirm them with the help of statistical tools.

Hypotheses; following are the two hypotheses which can be made by studying the literature review and introduction.

Null Hypothesis (H0): There is no a significant relationship between interest rate volatility and the stock market.

Hypothesis (H1): There is a significant relationship between interest rate volatility and the stock market return.

This research has been approved with the special direction of the stock market; the stock market free float index is used which is readily available on ASE. Data is used on the monthly basis for ten years for more profound study. The sample size is the stock market index and interest rates for 120 months. The study employs tools such as Descriptive Statistics and Augmented Dickey and Fuller test (ADF test).

6. Research method

The study looks into the connection between the market index and the interest rate. The dataset comprises of monthly time series data for Jordan over periods of 2006 to 2016. All data have been processed by using E-Views 9.0 software.

Market Index: The Free Float Index has been chosen as the measure of stock market performance which captures the daily price movements of equities at the stock exchange. Share Price Index Weighted by Market Capitalization of Free Float

Interest Rate: Interest rate is proxied by the Schedule banks' weighted average interest rates on savings deposit.

The summary of the descriptive statistics of the study variables are shown in the Table (1).

The structural model to assess the relationship between log transformed variables is stated below:

$$L Y_t = \beta_0 + \beta_1 LINT + \varepsilon_t \quad (1)$$

Where, Y is a natural log of free float index and $LINT$ is a natural log of interest rate. β_0 and β_i are the parameters known as the intercept and slope coefficient and ε is the classical random disturbance term. To check for non-stationary property, the data are subjected to Augmented Dickey and Fuller test (ADF test). The following regression is for ADF test purpose:

$$\Delta Y_t = \beta_1 + \beta_2 t + \delta Y_{t-1} + \alpha_i \sum \Delta Y_{t-i} + \varepsilon_t \quad (2)$$

Where, ε_t : is a white noise error term and $Y_{t-1} = Y_{t-1} - Y_{t-2}$ and so on are the number of lagged difference term which is empirically determined. Using Schwarz Information Criterion (SIC) the lag length is selected automatically by E-views 9 software.

Our next step is to verify whether the variables have a constant and non-spurious cointegrating relationship among themselves. For the purpose of testing Cointegration, we have chosen the Johansen procedure and lag order is selected on the basis of Schwarz Bayesian Criteria (SBC). The Johansen approach of Cointegration test is based on the following Vector Autoregressive model:

$$Y_t = \Phi D_t + \Pi_1 Y_{t-1} + \dots + \Pi_k Y_{t-k} + \varepsilon_t \quad (3)$$

Where D_t is the deterministic term, Y_t is an $(n \times 1)$ vector of $I(1)$ variables, Π_t is $(n \times n)$ matrix of parameters and ε_t is $(n \times 1)$ vector of white noise error.

If there is at slightest one cointegrating relationship among the variables, then the causal relationship between these variables can be approximate by the Vector Error Correction Model (VECM) which supplies information about the speed of adjustment to long run equilibrium keep away from the spurious regression problem (Engle & Granger, 1987). The Error Correction Model (ECM) is based on following regression:

$$\Delta Y_t = \alpha + \beta x_t + \beta U_{t-1} + \varepsilon_t \quad (4)$$

Where U is the one period lagged value of the residual and the error correction factor of the model which computes the speed at which the past deviations from equilibrium are corrected and Δ symbolize first-the differences operator. Resulting

to VECM model is estimated, and then we use Variance Decompositions to investigate the behavior of an error shock to each variable on its own future dynamics plus on the future dynamics of the other variables in the VECM system. Impulse response analysis is also carried out by giving a shock of one standard deviation (± 2 S.E. innovations) to the interest rate to describe the duration of their outcomes on the stock market of ASE.

The final step of our analysis is to test for causality between market index and interest rate in the long run based on Granger causality test. The test involves estimating the following regressions to examine Granger causality:

$$Y_t = \sum_{i=1}^n \alpha_i X_{t-i} + \sum_{j=1}^n \beta_j Y_{t-j} + \varepsilon_{1t} \quad (5)$$

$$X_t = \sum_{i=1}^m \lambda_i X_{t-i} + \sum_{j=1}^m \delta_j Y_{t-j} + \varepsilon_{2t} \quad (6)$$

Where it is supposed that the disturbance ε_{1t} and ε_{2t} are uncorrelated. First regression adopts that current value of Y is associated with the past values of X; and second regression suggests that current value of X is correlated with the past values of Y. The hypothesis of Granger causality test is: $H_0: \alpha_i = 0$: X does not Granger cause Y versus $H_1: \alpha_i \neq 0$: X Granger causes Y.

7. Results and discussion

This research argues the outcomes from the analysis for the relationship between the interest rate and the stock return in ASE market. It involves of the descriptive statistics analysis, correlation result and regression result. The table (1) provides the descriptive statistics. The descriptive statistics result of stock return and trading volume of ASE market are offered above (Table 1). It includes the mean, median, maximum and minimum value, standard deviation, skewness, kurtosis and Jarque-Bera (JB) test of normality.

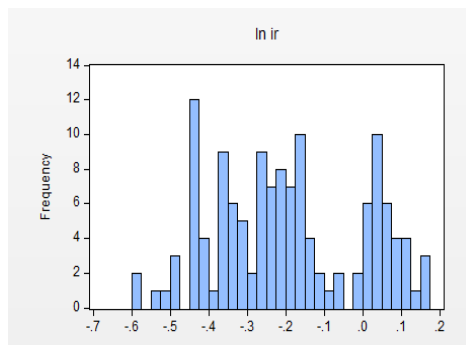


Figure 1. Normality distribution for Interest rate

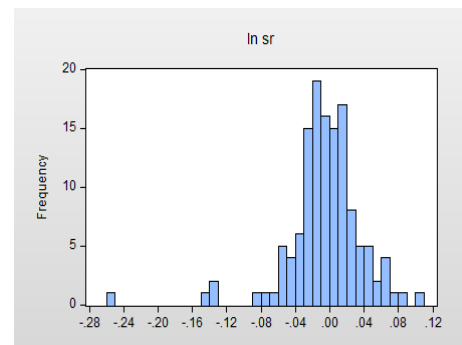


Figure 2. Normality distribution stock return

Table 1. Summary of Descriptive Statistics

Variables	LN IR	LN SR
Mean	-0.193691	-0.005429
Median	-0.210721	-0.004217
Maximum	0.173953	0.103722
Minimum	-0.579818	-0.250182
Std. Dev.	0.188566	0.044058
Skewness	0.184121	-1.664440
Kurtosis	1.991177	10.70045
Jarque-Bera	6.295237	384.1490
Probability	0.042954	0.000000
Sum	-25.37354	-0.711206
Sum Sq. Dev.	4.622409	0.252339
Observations	131	131

Negative and low stock return's mean of (-0.005429) is associates with consistent with low standard deviation; (0.044058). The wide gap between maximum and minimum value (max; 0.103722 min; -0.250182) of stock return indicates that there is a high unpredictability in stock return changes in the ASE market. Meanwhile stock return represents a negative skewness (-1.664440) of indicating a left tail of distribution which interpreting that the data are not fairly asymmetry. Kurtosis value is which is 10.70045 > 3, showing that it is a leptokurtic distribution, sharper than a normal distribution, with values concentrated around the mean and thicker tails. Furthermore, significant JB value (384.1490) explains the deviation of normal distribution thus rejecting the null hypothesis.

On the other part, interest rate reports low standard deviation of (0.188566) which relates to low mean of (-0.193691) indicating lowest volatility in interest rate series. Moreover, interest rate is right skewed (positive value of (0.184121) indicating the right tail is long relative to the left tail and kurtosis value (1.991177) is slightly lower than 3 implying that volume series have not a fat tails than the normal distribution. It is consistent with JB test that shows the data is not normally distributed since both the skewness and kurtosis are not equal to zero. Thus, these two series reject the null hypothesis that the series is normally distributed

Table 2. Regression Results

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.009155	0.005532	-1.655075	0.1003
LN_IR	-0.019238	0.020502	-0.938385	0.3498
R-squared	0.006780	Mean dependent var		-0.005429
Adjusted R-squared	-0.000920	S.D. dependent var		0.044058
S.E. of regression	0.044078	Akaike info criterion		-3.390570
Sum squared resid	0.250628	Schwarz criterion		-3.346674
Log likelihood	224.0824	Hannan-Quinn criter.		-3.372733
F-statistic	0.880566	Durbin-Watson stat		1.387870
Prob(F-statistic)	0.349800			

Table 2 reports the evidence of relationship between current stock return (R_t) and current interest rate (IR_t) as presented in Equation (1) above. It found a negative coefficient of (-0.019238) which is insignificant at 2% level indicating that stock return has negative relationship with interest rate. Moreover, $F = 0.880566$ and $P = 0.3498$ suggest that the regression model significantly fits the data.

On the other hand, negative T-test value (-0.938385) that explains that one single variable is not significant to interpret the other one single variable. F-test is insignificant and reliable as the value is lower than 2 (0.880566) explaining that the variables are not jointly significant. In addition to that, adjusted R-squared is also very small at (0.006780) only. This study can reject null Hypothesis because the coefficient is significant. The P-value is significant at 1% level for SR (Stock return) suggesting that this study accepting the Hypothesis 1 that there is a statistical significant positive relationship between stock return and interest rate.

Table 3. Breusch-Godfrey Serial Correlation LM Test

F-statistic	5.318570	Prob. F(2,127)	0.0061
Obs*R-squared	10.12420	Prob. Chi-Square(2)	0.0063

The Breusch–Godfrey serial correlation LM (Lagrange multiplier) test is an experiment for autocorrelation in the errors in a regression model. It creates usage of the residuals from the model existence measured in a regression analysis. Our autocorrelation valuation founded on Breusch-Godfrey Serial Correlation LM Test point out a biasness of prior approximation. The outcome of Breusch-Godfrey Serial Correlation LM Test is obtainable in table (3). The null hypothesis of the LM test is that there is no serial correlation up to lag order m where m is equal to 2 in this circumstance and the Obs*R-squared statistic is the Breusch-Godfrey LM

test statistic. The outcome shows that we can strongly reject the null hypothesis of no serial autocorrelation at 1% significance level. Thus there is existent autocorrelation between the variables and the prior projected model is a clue of spurious regression.

8. Stationary test

Table (4&5) shows the results of ADF test statistic used to check the non-stationary property of the data and to determine how many times the variable needs to be differenced to result in a stationary series. The results in table (3& 4) shows that ADF tests fail to reject the null of non-stationarity for all of the variables at level. After first differencing the result shows that interest rate (IR) and stock return (SR) became stationary at the 1% significance level, implying that all the variables are first order integrated I(1). Figure (2) shows stationarity trend after first differencing the variables. The ADF statistic value is (-13.31543) and the associated one-sided p-value is (0.000). In addition, E-Views reports the critical values at the 1%, 5% and 10% levels. Notice here that the t- statistic value is lowest than the critical values so that we reject the null hypothesis at conventional test sizes.

Table 4. *ADF test for Stock Return*

			t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic			-13.31543	0.0000
Test critical values:	1% level		-4.031309	
	5% level		-3.445308	
	10% level		-3.147545	
Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(LN_SR(-1))	-1.768524	0.132818	-13.31543	0.0000
D(LN_SR(-1),2)	0.329761	0.081801	4.031248	0.0001
C	0.000441	0.008297	0.053116	0.9577
@TREND("2006M01")	-1.73E-06	0.000109	-0.015851	0.9874

Table 5. *ADF for Interest Rate*

			t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic			-18.08423	0.0000
Test critical values:	1% level		-4.030157	
	5% level		-3.444756	
	10% level		-3.147221	
Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(LN_IR(-1))	1.451833	0.080282	-18.08423	0.0000
C	0.003562	0.010654	0.334289	0.7387
@TREND("2006M01")	-0.000127	0.000140	-0.911620	0.3637



Figure 3. *Stationary test*

As the variables are reflected to be first differencing (I), the Cointegration method is fitting to assessment the long run relationship between the variables. To discover the number of cointegrating vectors, Maximal Eigen value and Trace statistics both are utilized and shown in Table (6). The Trace statistic and Maximal Eigen statistic both recognized one cointegrating vector. The existence of Cointegration indicates the existence of a stable long run relationship between interest rate and market index. The normalized cointegrating coefficients are

reported in table (7). This brightly displays that in the long run interest rate has a negative effect on market index. The relationship is set up statistically significant at the 10% level. The result is indicating that in ASE in the long run, a one percent increase in interest rate contributes 12.3459% decrease in market index.

Table 6. Unrestricted cointegration rank test (Trace)

Hypothesized		Trace	0.05	
No. of CE(s)	Eigenvalue	Statistic	Critical Value	Prob.**
None *	0.217667	32.09567	15.49471	0.0001
At most 1	0.009210	1.165868	3.841466	0.2803
Hypothesized		Max-Eigen	0.05	
No. of CE(s)	Eigenvalue	Statistic	Critical Value	Prob.**
None *	0.217667	30.92980	14.26460	0.0001
At most 1	0.009210	1.165868	3.841466	0.2803

Table 7. Cointegrating Equation(s)

Log likelihood		414.1436
Normalized cointegrating coefficients (standard error in parentheses)		
LN_SR	LN_IR	
1.000000	0.016916	
	(0.02527)	
Adjustment coefficients (standard error in parentheses)		
D(LN_SR)	-0.778605	
	(0.10427)	
D(LN_IR)	-0.123459	
	(0.15159)	

9. Vector error correction model

The constant long run relationship between the variables confirmed by Cointegration test may not exist in the short run. Hence, Vector Error Correction Mechanism (VECM) has been utilized to decide the level of short run adjustments to long run balance relationship between the variables. The results of VECM were shown in table (8). The estimated error correction coefficient indicates that about (-0.678522) deviation of the market index from its long run equilibrium level is corrected each period in the short run, while the gaps in the interest rate close by about 0.15 percent.

Table 8. Error correction model

CointegratingEq:		CointEq1
LN_SR(-1)		1.000000
LN_IR(-1)		0.008351
		(0.02906)
		[0.28740]
C		0.005647
Error Correction:	D(LN_SR)	D(LN_IR)
CointEq1	-0.678522	0.149725
	(0.12500)	(0.16464)
	[-5.42799]	[0.90939]
D(LN_SR(-1))	-0.015887	-0.315738
	(0.10637)	(0.14010)
	[-0.14936]	[-2.25371]
D(LN_SR(-2))	-0.095364	-0.139854
	(0.08694)	(0.11451)
	[-1.09689]	[-1.22133]
D(LN_IR(-1))	-0.089668	-0.447827
	(0.06279)	(0.08270)
	[-1.42800]	[-5.41479]
D(LN_IR(-2))	-0.049787	-0.135920
	(0.06248)	(0.08230)
	[-0.79682]	[-1.65159]
C	-0.000711	-0.006558
	(0.00364)	(0.00480)
	[-0.19520]	[-1.36683]

10. Variance decompositions and impulse response function

We use Variance Decomposition to measure the percentage of predict error of variation that is elucidated by another variable within the short-run dynamics and interactions. The results of Variance Decompositions are presented in table (9). The results of Variance Decompositions show that the dynamic divergence in market index explains around 99.99705% of the components of variation in the first period when the shock by a standard deviation of one in the variable itself, and in the second period it goes to 98.61266 % of the error prediction of the variability. During the second period 1.387339 variation in market index is due to variation in interest rate. The increase in the percentage attributable to variation in interest rate continues to fluctuate with an inclination to increase that up to about 1.708450 in the period of the tenth. Figure (4) shows impulse responses. It shows the impact of a one standard deviation generalized innovation in the interest rate on the stock market index of ASE. The effect of a shock to the interest rate on the market index was positive throughout 10 months horizon.

Table 9. *Variance Decomposition*

LN_IR:			
Period	S.E.	LN_IR	LN_SR
1	0.053923	100.0000	0.000000
2	0.061986	98.79776	1.202241
3	0.070806	99.04159	0.958408
4	0.079268	98.59193	1.408073
5	0.085965	98.52808	1.471916
6	0.092473	98.41681	1.583188
7	0.098586	98.27280	1.727198
8	0.104263	98.17655	1.823446
9	0.109675	98.09368	1.906321
10	0.114834	98.02120	1.978795
LN_SR:			
Period	S.E.	LN_IR	LN_SR
1	0.040941	0.002950	99.99705
2	0.043109	1.387339	98.61266
3	0.043186	1.656034	98.34397
4	0.043283	1.655035	98.34497
5	0.043302	1.679195	98.32080
6	0.043305	1.692082	98.30792
7	0.043306	1.694448	98.30555
8	0.043308	1.699827	98.30017
9	0.043309	1.704531	98.29547
10	0.043309	1.708450	98.29155

Null Hypothesis:	Obs	F-Statistic	Prob.
LN_IR does not Granger Cause LN_SR	129	0.98883	0.3749
LN_SR does not Granger Cause LN_IR		0.96101	0.3853

11. Granger causality test

Our final step of analysis is to test for causality between market index and interest rate in the long run. The outcomes are offered in table (10). Granger-causality outcomes submit that the null hypotheses that IR does not Granger cause SR is accepted at 0.3749 significance level which states that there is no a uni-directional causality running from interest rate to market index.

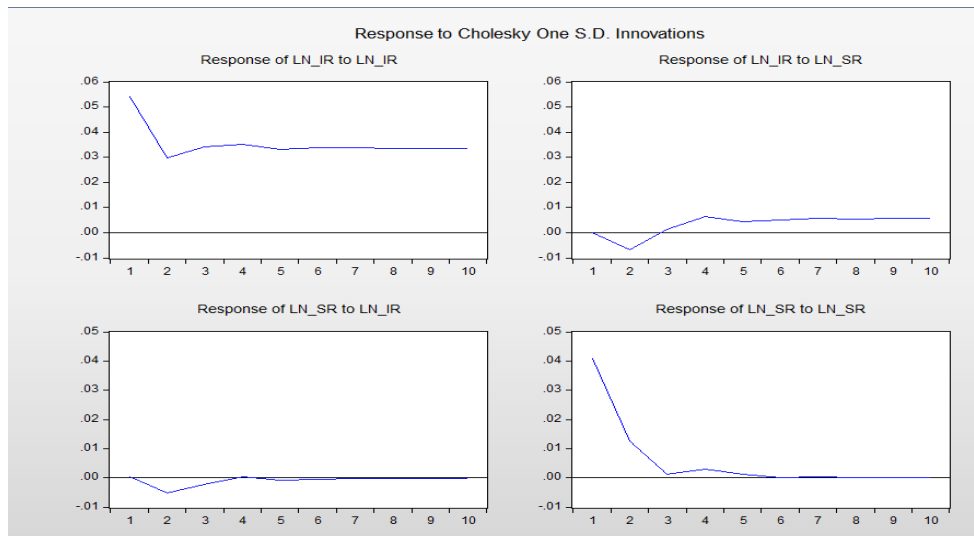


Figure 4. Impulse response function

12. Conclusion

This study tries to examine the analytical power of the interest rate volatility on the returns of the stock market in ASE. The outcomes of unit root test appearance that all the data series of the variables are integrated of order one. Our Johansen procedure of Cointegration test suggests at least one cointegrating relationship between the variables. The result of the analysis shows that in the long run interest rate has a negative and significant impact on stock prices where about 12.3459 percent deviation of the market index from its long run balance level is modified each period in the short-run. Suggestion from Granger causality analysis recommends that there is not exists a unidirectional causality from interest rate to a market index.

Financiers should study the systematic risks showing the interest rates in making their portfolios and creating investment choices. It is advised that regulators and policymakers should contemplate the consequence of macroeconomic variables mainly the interest rate before communicating different economic policies. The results of the study can be combined with market policies in the procedure of emerging a vibrant capital market for guaranteeing the constant economic growth of the nation. However, the study exposes a long-run negative relationship between the variables with non a unidirectional causality from variations in interest rate to the stock market of ASE, but the policy to impact the stock market by monitoring interest rate may not be fully real due to unproductive operational of capital market and deficiency of debt market. So, it is proposed that before executing the policy of the authority should highlight the development of a vibrant and efficient capital market.

References

- Adam, A.M., & Tweneboah, G. (2008). Do macroeconomic variables play any role in the stock market movement in Ghana?, MPRA Paper, No.9301. [\[Retrieved from\]](#).
- Arango, L., Gonzalez, A., & Posada, C. (2002). Returns and interest rate: A nonlinear relationship in the Bogota stock market. *Applied Financial Economics*, 12(11), 835-842. [10.1080/09603100110094493](#)
- Booth, J., & Booth, L. (1997). Economic factors, monetary policy, and expected returns on stocks and bonds. *Economic Review*, Federal Reserve Bank of San Francisco, 2, 32-42.
- Chen, N., Roll, R., & Ross, S. (1986). Economic forces and the stock market. *Journal of Business*, 59(3), 383-403. [10.1086/296344](#)
- Cifter, A., & Ozun A. (2007). Estimating the effects of interest rates on share prices using multi-scale causality test in emerging markets: Evidence from Turkey. *MPRA Paper* No.2485. [\[Retrieved from\]](#).
- Coleman, A.K., & Tettey, K.F.A. (2008). Impact of macroeconomic indicators on stock market performance: The case of the Ghana stock exchange. *Journal of Risk Finance*, 9(4), 365- 378. [10.1108/15265940810895025](#)
- Elton, E.J., & Gruber, M.J. (1988). A multi-index risk model of the Japanese stock market. *Japan and the World Economy*, 1(1), 21-44. [10.1016/0922-1425\(88\)90004-7](#)
- Engle, R., & Granger, C. (1987). Co-integration and error-correction: Representation, estimation and testing. *Econometrica*, 55(2), 251-276. [10.2307/1913236](#)
- Fama, E.F., & Schwert, G.W. (1977). Asset returns and inflation. *Journal of Financial Economics*, 5, 115-146. [10.1016/0304-405X\(77\)90014-9](#)
- Harasty, H., & Roulet, J. (2000). Modeling stock market returns. *Journal of Portfolio Management*, 26(2), 33-46.
- Hardouvelis, G.A. (1987). Macroeconomic information and stock prices. *Journal of Economics and Business*, 39(2), 131-140. [10.1016/0148-6195\(87\)90012-9](#)
- Hsing, Y. (2004). Impacts of fiscal policy, monetary policy, and exchange rate policy on real GDP in Brazil: A VAR model. *Brazilian Electronic Journal of Economics*, 6(1), 1-6.
- Joseph, N.A., & Vezos, P. (2006). The sensitivity of US bank's stock returns to interest rate and exchange rate changes. *Managerial Finance*, 32(2), 182-199. [10.1108/0307435061064193](#)
- Khrawish, H.A., Siam, W.Z., & Jaradat, M. (2010). The relationships between stock market capitalization rate and interest rate: Evidence from Jordan. *Business and Economic Horizons*, 2(2), 60-66. [10.15208/beh.2010.17](#)
- Kim, K.H. (2003). Dollar exchange rate and stock price: Evidence from multivariate cointegration and error correction model. *Review of Financial Economics*, 12(3), 301-313. [10.1016/S1058-3300\(03\)00026-0](#)
- Leon, N.K. (2008). The effects of interest rates volatility on stock returns and volatility: Evidence from Korea. *Euro Journal of Finance and Economics*, 14, 285-290.
- Mayasami, R.C., Howe, L.C., & Rahmat, M.A. (2004). Relationship between macroeconomic variables and stock market indices: Cointegration evidence from stock exchange of Singapore's all-S sector Indices. *Journal Pengurusan*, 24, 47-77.
- Mishkin, F.S. (1977). What depressed the consumer? The household balance sheet and the 1973-1975 recession. *Brookings Papers on Economic Activity*, 1, 123-164. [10.1017/S0022050700087167](#)
- Modigliani, F. (1971). Monetary policy and consumption: Linkages via interest rate and wealth effects in the FMP model. Consumer spending and monetary policy: The linkages, *Federal Reserve Bank of Boston Conference Series*, No.5. [\[Retrieved from\]](#).
- Mohamed, E.H.A., Jawadi, F. & Nguyen, D.K. (2008). International stock return linkages: Evidence from Latin American markets. *European Journal of Economics, Finance and Administrative Sciences*, 11, 57-65.
- Nikiforos T.L. (2006). Dynamic interactions among the stock market, federal funds rate, inflation, and economic activity. *The Financial Review*, 41(4), 513-545. [10.1111/j.1540-6288.2006.00155.x](#)
- Nissim, D., & Penman, S. (2003). The association between changes in interest rates, earnings, and equity values. *Contemporary Accounting Research*, 20(4), 775-804. [10.1506/YKRX-HUQU-9V28-EA16](#)
- Ologunde, A.O., Elumilade, D.O., & Asaolu, T.O. (2006). Stock market capitalization and interest rate in Nigeria: A time series analysis. *International Research Journal of Finance and Economics*, 4, 154-166.
- Omran, M. (2003). Time series analysis of the impact of real interest rates on stock market activity and liquidity in Egypt: Co-integration and error correction model approach. *International Journal of Business*, 8(3), 359-374. [10.2139/ssrn.420248](#)
- Pallegedara, A. (2012). Dynamic relationships between stock market performance and short term interest rate empirical evidence from Sri Lanka. MPRA Paper, No.40773. [\[Retrieved from\]](#).
- Patelis, A.D. (1997). Stock return predictability and the role of monetary policy. *The Journal of Finance*, 2(5), 1951-1972. [10.1111/j.1540-6261.1997.tb02747.x](#)
- Sellin, P. (2001). Monetary policy and the stock market: Theory and empirical evidence. *Journal of Economic Surveys*, 15(4), 491-541. [10.1111/1467-6419.00147](#)
- Shah, A., Rehman, J.U., Kamal, Y., & Abbas, Z. (2012). The interest rates-stock prices nexus in highly volatile markets: Evidence from Pakistan. *Journal of Basic and Applied Scientific Research*, 2(3), 2589-2598.

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- Smirlock, M., & Yawitz, J. (1985). Asset returns, discount rate changes, and market efficiency. *Journal of Finance*, 40(4), 1141-1158. [10.1111/j.1540-6261.1985.tb02368.x](https://doi.org/10.1111/j.1540-6261.1985.tb02368.x)
- Subramanian, U. (2008). Cointegration of stock markets of East Asia. *European Journal of Economics, Finance and Administrative Sciences*, 14, 84-92.
- Thorbecke, W. (1997). On stock market returns and monetary Policy. *Journal of Finance*, 52(2), 635-654. [10.1111/j.1540-6261.1997.tb04816.x](https://doi.org/10.1111/j.1540-6261.1997.tb04816.x)
- Vardar, G., Aksoy, G., & Emre, C. (2008). Effects of interest and exchange rate on volatility and return of sector price indices at Istanbul stock exchange. *European Journal of Economics, Finance and Administrative Sciences*, 11, 126-135.



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